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An E8 x E8 unification of the standard model with pre-gravitation

Friday 16 December 2022 14:00 (1 hour)

We propose an E8⊗E8 unification of the standard model with pre-gravitation, on an octonionic space (i.e. an octonion-valued twistor space equivalent to a 10D space-time). Each of the E8 has in its branching an SU(3) for space-time and an SU(3) for three fermion generations. The first E8 further branches to the standard model SU(3)c⊗SU(2)L⊗U(1)Y and describes the gauge bosons, Higgs and the left chiral fermions of the standard model. The second E8 further branches into a right-handed counterpart (pre-gravitation) SU(3)grav⊗SU(2)R⊗U(1)g of the standard model, and describes right chiral fermions, a Higgs, and twelve gauge bosons associated with pre-gravitation, from which general relativity is emergent. The extra dimensions are complex and they are not compactified, and have a thickness comparable to the ranges of the strong force and the weak force. Only classical systems live in 4D; quantum systems live in 10D at all energies, including in the presently observed low-energy universe. We account for 208 out of the 496 degrees of freedom of E8⊗E8 and propose an interpretation for the remaining 288, motivated by the trace dynamics Lagrangian of our theory.

Session

Beyond the Standard Model

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